Sweet Crude Oil

Safety Data Sheet EP201-003

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SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product form : Mixture

Product name : Sweet Crude Oil

Other means of identification : Crude Oil

1.2. Relevant identified uses of the substance or mixture and uses advised against

Use of the substance/mixture : Refinery Feedstock.

1.3. Details of the supplier of the safety data sheet

Enterprise Products
1100 Louisiana St.
Rm 23.174
Houston, TX 77002
T 888-806-3794
www.enterpriseproducts.com

1.4. Emergency telephone number

Emergency number : CHEMTREC: 1-800-824-9300

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification (GHS-US)

Flam. Liq. 1	H224
Skin Irrit. 2	H315
Muta. 1B	H340
Carc. 1A	H350
STOT RE 1	H372
Asp. Tox. 1	H304
Aquatic Acute 2	H401
Aquatic Chronic 3	H412

Full text of H-phrases: see section 16

2.2. Label elements

GHS-US labeling

Hazard pictograms (GHS-US) :

GHS02 GHS07 GHS08

Signal word (GHS-US) : Danger

Hazard statements (GHS-US) :
H224 - Extremely flammable liquid and vapor
H304 - May be fatal if swallowed and enters airways
H315 - Causes skin irritation
H340 - May cause genetic defects (Inhalation)
H350 - May cause cancer (Inhalation)
H372 - Causes damage to organs (blood, spleen, liver, pancreas) through prolonged or repeated exposure
H401 - Toxic to aquatic life
H412 - Harmful to aquatic life with long lasting effects

Precautionary statements (GHS-US) :
P201 - Obtain special instructions before use
P202 - Do not handle until all safety precautions have been read and understood
P210 - Keep away from heat, hot surfaces, open flames, sparks. - No smoking
P233 - Keep container tightly closed
P240 - Ground/bond container and receiving equipment
P241 - Use explosion-proof electrical, lighting, ventilating equipment
P242 - Use only non-sparking tools
P243 - Take precautionary measures against static discharge
P260 - Do not breathe fume, mist, spray, vapors
P264 - Wash exposed skin thoroughly after handling

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P270 - Do not eat, drink or smoke when using this product
P273 - Avoid release to the environment
P280 - Wear appropriate PPE
P301 + P310 - If swallowed: Immediately call a POISON CENTER
P302 + P352 - If on skin: Wash with plenty of water and pH neutral soap
P303 + P361 + P353 - If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower
P308 + P313 - If exposed or concerned: Get medical advice/attention
P314 - Get medical advice/attention if you feel unwell
P321 - Specific treatment (see First Aid Measures on this label)
P331 - Do NOT induce vomiting
P332+P313 - If skin irritation occurs: Get medical advice/attention
P362 - Take off contaminated clothing and wash before reuse
P370+P378 - In case of fire: Use carbon dioxide (CO_2), alcohol resistant foam to extinguish
P403+P235 - Store in a well-ventilated place. Keep cool
P405 - Store locked up
P501 - Dispose of contents/container to comply with local/regional/national/international regulations

2.3. Other hazards

Other hazards not contributing to the classification : Warning - May displace oxygen and cause rapid suffocation.

2.4. Unknown acute toxicity (GHS-US)

Not applicable

SECTION 3: Composition/information on ingredients

3.1. Substance

Not applicable

3.2. Mixture

Name	Product identifier	%	Classification (GHS-US)
Crude Oil	(CAS No) 8002-05-9	100	Flam. Liq. 2, H225 Aquatic Acute 2, H401
Gasoline	(CAS No) 8006-61-9	<= 30	Flam. Liq. 1, H224 Muta. 1B, H340 Carc. 1B, H350 Asp. Tox. 1, H304
n-Hexane	(CAS No) 110-54-3	<= 10	Flam. Liq. 2, H225 Skin Irrit. 2, H315 STOT SE 3, H336 STOT RE 2, H373 Asp. Tox. 1, H304 Aquatic Acute 2, H401 Aquatic Chronic 2, H411
Benzene	(CAS No) 71-43-2	0 - 9	Flam. Liq. 2, H225 Skin Irrit. 2, H315 Muta. 1B, H340 Carc. 1A, H350 STOT RE 1, H372 Asp. Tox. 1, H304
Ethylbenzene	(CAS No) 100-41-4	<= 1	Flam. Liq. 2, H225 Acute Tox. 4 (Inhalation), H332 Carc. 2, H351 STOT RE 2, H373 Asp. Tox. 1, H304 Aquatic Acute 2, H401
Naphthalene	(CAS No) 91-20-3	<= 1	Acute Tox. 4 (Oral), H302 Carc. 1B, H350 Aquatic Acute 1, H400 Aquatic Chronic 1, H410
Sulfur	(CAS No) 7704-34-9	<= 0.5	Acute Tox. 4 (Dermal), H312 Skin Irrit. 2, H315

Full text of H-phrases: see section 16

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures general : Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves. Keep victim warm and quiet.

First-aid measures after inhalation	:	Move victim to fresh air. Give artificial respiration if victim is not breathing. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Administer oxygen if breathing is difficult. Get medical attention. Get immediate medical attention.
First-aid measures after skin contact	:	In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes. Wash with plenty of soap and water. In case of burns, immediately cool affected skin for as long as possible with cold water. Do not remove clothing if adhering to skin.
First-aid measures after eye contact	:	Immediately flush with large amounts of water, holding eyelids open, for at least 20 minutes. Repeat if necessary. Remove contact lenses, if present and easy to do. Seek medical assistance if irritation persists.
First-aid measures after ingestion	:	Do not induce vomiting. If vomiting occurs spontaneously, keep head below hips to prevent aspiration of liquid into the lungs. Slowly give 1-2 glasses of water or milk and seek medical attention. Never give anything by mouth to an unconscious person.

4.2. Most important symptoms and effects, both acute and delayed

Symptoms/injuries	:	Asphyxiation. Suspected of causing cancer (Inhalation).
Symptoms/injuries after inhalation	:	Exposure to low levels (700 to 3,000 ppm) may cause drowsiness, dizziness, tachycardia, headaches, tremors, confusion and unconsciousness. Exposure to high concentrations (3,000 ppm or higher) may cause acute poisoning, characterized by the narcotic action of benzene on the CNS. Inhalation of crude oil may present an anesthetic action similar to that of other anesthetic gases, consisting of a preliminary stage of excitation followed by depression and, if exposure is continued, seizures, paralysis, ventricular arrhythmias and death due to respiratory failure. May cause cancer by inhalation.
Symptoms/injuries after skin contact	:	Skin contact may cause irritation and redness. Repeated or prolonged skin contact may cause dermatitis. Crude oil is a defatting agent and skin contact may cause dryness, itching, and cracked skin.
Symptoms/injuries after eye contact	:	Eye contact with vapors may cause eye irritation, watering of eyes and reddening. Eye contact with liquid may cause irritation and pain. Prolonged contact may result in tissue damage.
Symptoms/injuries after ingestion	:	Swallowing this material may be harmful. May cause irritation of the mouth, throat and gastrointestinal tract. Symptoms may include salivation, pain, nausea, vomiting and diarrhea. Aspiration into lungs may cause chemical pneumonia and lung damage.
Chronic symptoms	:	Chronic exposure to benzene (a component of crude oil) may cause serious damage to health by all routes of exposure. Chronic oral and inhalation exposure may cause severe effects on the blood system, including damage to the bone marrow, leading to a decrease in production or changes to the cells of hemoglobin, hematocrit, red and white blood cells. Effects may occur with an exposure level as low as 10 ppm for 24 weeks. Benzene may also cause harmful changes to the immune system. Benzene is a confirmed human carcinogen. See Section 11 of this SDS for further information.

4.3. Indication of any immediate medical attention and special treatment needed

The following guidelines are derived from “Clinical Toxicology of Commercial Chemical Products” (5th edition, 1984) for benzene: Check for signs of impending pulmonary edema. Because of the aspiration hazard, avoid emetic drugs, whenever practical. For overexposures in which emesis is advisable: If the patient is not drowsy, comatose, or in respiratory difficulty, induce vomiting. If necessary, as an alternative treatment, remove Benzene from the stomach via gastric lavage. One or two ounces of mineral oil may be instilled and left in the stomach at the completion of lavage. Avoid epinephrine because of its possible adverse effect on the sensitized myocardium. Avoid all digestible fats, oils and alcohol which may promote the absorption of benzene in the intestinal system. If eyes or skin are affected, wash thoroughly and apply a bland analgetic ointment. Because of the possibility of ventricular fibrillation, monitor the ECG continuously and be prepared to administer external cardiac massage. Refer to the OSHA Benzene Standard [29 CFR 1910.1028; paragraph(i) and Appendix C] for specific information on Medical Surveillance requirements (i.e. for the general physical exam, medical history, specific tests, and re-examination protocol).

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media	:	Small Fire: Dry chemical, CO_2, water spray or regular foam. Large Fire: Water spray, fog or regular foam.
Unsuitable extinguishing media	:	Do not use direct water jets on the burning product as they could cause a steam explosion and spread of the fire. Do not use a heavy water stream.

5.2. Special hazards arising from the substance or mixture

Fire hazard	:	HIGHLY FLAMMABLE: Will be easily ignited by heat, sparks or flames. Vapors may travel to source of ignition and flash back. Most vapors are heavier than air. They will spread along ground and collect in low or confined areas. Many liquids are lighter than water. Substance may be transported hot.
Explosion hazard	:	May form flammable/explosive vapor-air mixture. Vapor explosion hazard indoors, outdoors or in sewers. Runoff to sewer may create fire or explosion hazard. Containers may explode when heated.

Reactivity	:	This product is anticipated to be stable under normal ambient storage and handling conditions of temperature and pressure.

5.3. Advice for firefighters

Firefighting instructions	:	Move containers from fire area if you can do it without risk. Fight fire from maximum distance or use unmanned hose holders or monitor nozzles. Cool containers with flooding quantities of water until well after fire is out. Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank. ALWAYS stay away from tanks engulfed in fire. For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.
Protection during firefighting	:	Wear positive pressure self-contained breathing apparatus (SCBA).Structural firefighters' protective clothing will only provide limited protection.
Other information	:	If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures	:	Evacuate area. No flames, no sparks. Eliminate all sources of ignition. Use of water spray when fighting fire may be inefficient.

6.1.1. For non-emergency personnel

Emergency procedures	:	Evacuate unnecessary personnel.

6.1.2. For emergency responders

Protective equipment	:	Equip cleanup crew with proper protection.
Emergency procedures	:	As an immediate precautionary measure, isolate spill or leak area for at least 50 meters (150 feet) in all directions. Large spill: Consider initial downwind evacuation for at least 300 meters (1000 feet). Keep unauthorized personnel away. Stay upwind. Keep out of low areas. Ventilate closed spaces before entering.

6.2. Environmental precautions

ENVIRONMENTAL PRECAUTIONS - Avoid contact of spilled material with soil and prevent runoff entering surface waterways. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

6.3. Methods and material for containment and cleaning up

For containment	:	ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). All equipment used when handling the product must be grounded. Do not touch or walk through spilled material. Stop leak if you can do it without risk. Prevent entry into waterways, sewers, basements or confined areas. A vapor suppressing foam may be used to reduce vapors. Large Spill: Dike far ahead of liquid spill for later disposal. Water spray may reduce vapor; but may not prevent ignition in closed spaces.
Methods for cleaning up	:	Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers. Use clean non-sparking tools to collect absorbed material.

6.4. Reference to other sections

See Heading 8. Exposure controls and personal protection.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Additional hazards when processed	:	Handle empty containers with care because residual vapors are flammable.
Precautions for safe handling	:	Use only with adequate ventilation. Wear appropriate personal protective equipment and use exposure controls as indicated in Section 8 of this SDS. Vent slowly to the atmosphere when opening. Avoid all contact with skin and eyes. Avoid breathing product dust or vapors. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Do not reuse container.
Hygiene measures	:	Remove contaminated clothing immediately. Wash with soap and water after working with this product. Do not eat, drink or smoke when using this product.

7.2. Conditions for safe storage, including any incompatibilities

Technical measures	:	Keep in airtight container away from all heat sources. Store in a segregated and approved area. Store in a cool, dry location, away from direct sunlight, sources of intense heat, or where freezing is possible. Keep container in a well-ventilated area. Store away from incompatible materials. Store in the original container or an approved alternative made from compatible material. Do not store in unlabeled containers. Treat empty containers in a similar fashion as residual product may exist. Use appropriate containment to avoid environmental contamination.
Storage conditions	:	Containers should be stored in room at ambient temperature and pressure.

Incompatible products : Store away from strong oxidizing materials. Strong acids. Strong bases.
Incompatible materials : Sources of ignition. Direct sunlight. Heat sources.

7.3. Specific end use(s)

No additional information available

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Crude Oil (8002-05-9)		
ACGIH	Not applicable	
OSHA	OSHA PEL (TWA) (mg/m³)	2000 mg/m³
OSHA	OSHA PEL (TWA) (ppm)	500 ppm

Benzene (71-43-2)		
ACGIH	ACGIH TWA (mg/m³)	1.6 mg/m³
ACGIH	ACGIH TWA (ppm)	0.50 ppm
ACGIH	ACGIH STEL (mg/m³)	8 mg/m³
ACGIH	ACGIH STEL (ppm)	2.5 ppm
ACGIH	Remark (ACGIH)	Leukemia
OSHA	OSHA PEL (TWA) (ppm)	1 ppm (See 29 CFR 1910.1028) OSHA AL 0.5 ppm TWA
OSHA	OSHA PEL (STEL) (ppm)	5 ppm
OSHA	Remark (US OSHA)	Engineering and work practice controls shall be used to keep exposures below 10 ppm unless it is proven to be not feasible.

n-Hexane (110-54-3)		
ACGIH	ACGIH TWA (mg/m³)	176 mg/m³
ACGIH	ACGIH TWA (ppm)	50 ppm
ACGIH	Remark (ACGIH)	CNS impair; peripheral
OSHA	OSHA PEL (TWA) (mg/m³)	1800 mg/m³
OSHA	OSHA PEL (TWA) (ppm)	500 ppm

Sulfur (7704-34-9)		
ACGIH	Not applicable	
OSHA	Not applicable	

Gasoline (8006-61-9)		
ACGIH	ACGIH TWA (mg/m³)	0
ACGIH	ACGIH TWA (ppm)	300 ppm
ACGIH	ACGIH STEL (ppm)	500 ppm
ACGIH	Remark (ACGIH)	Appendix A3 - Confirmed Animal Carcinogen with Unknown Relevance to Humans.
OSHA	Not applicable	

Ethylbenzene (100-41-4)		
ACGIH	ACGIH TWA (mg/m³)	87 mg/m³
ACGIH	ACGIH TWA (ppm)	20 ppm
ACGIH	Remark (ACGIH)	URT irr; kidney dam (nephropathy)
OSHA	OSHA PEL (TWA) (mg/m³)	435 mg/m³
OSHA	OSHA PEL (TWA) (ppm)	100 ppm

Naphthalene (91-20-3)		
ACGIH	ACGIH TWA (ppm)	10 ppm
ACGIH	Remark (ACGIH)	Hematologic eff; URT & eye irr; Skin; A3
OSHA	OSHA PEL (TWA) (mg/m³)	50 mg/m³
OSHA	OSHA PEL (TWA) (ppm)	10 ppm

8.2. Exposure controls

Appropriate engineering controls : Provide sufficient ventilation to control exposure levels below airborne exposure limits. Use local mechanical exhaust ventilation at sources of air contamination such as open process equipment. Consult current NFPA Standard 91 and ACGIH manual on Industrial Ventilation for design of exhaust system. Have eye baths available at locations where there is potential for eye contact. Provide a safety shower at locations where skin contact can occur.

Personal protective equipment : Avoid all unnecessary exposure.

Materials for protective clothing : Nitrile. Viton®.

Hand protection : Wear protective gloves.

Eye protection : Chemical goggles or safety glasses.

Skin and body protection : Wear fire resistant clothing (FRC).

Respiratory protection : Avoid breathing mist, and/or vapor. Use NIOSH/MSHA approved equipment when airborne exposure limits are exceeded. Consult respirator manufacturer to determine appropriate type of equipment for given application. The respirator use limitations specified by NIOSH/MSHA and the manufacturer must be observed. High airborne concentrations may require use of self-contained breathing apparatus or supplied air respirator. Respiratory protection programs must be in compliance with 29 CFR 1910.134.

Other information : Do not eat, drink or smoke during use.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state : Liquid

Appearance : Amber to black viscous liquid.

Color : Amber to black.

Odor : Hydrocarbon odor

Odor threshold : No data available

pH : Not Established

Relative evaporation rate (butyl acetate=1) : No data available

Melting point : Not Established

Freezing point : Not Established

Boiling point : -7 - 4°C (20 - 40°F)

Flash point : < 23 °C (73°F)

Auto-ignition temperature : 232 °C (450°F)

Decomposition temperature : No data available

Flammability (solid, gas) : No data available

Vapor pressure : 0 - 14 psia

Relative vapor density at 20 °C : 1.5 - 3.0 (Air = 1)

Relative density : No data available

Solubility : Negligible.

Log Pow : No data available

Log Kow : No data available

Viscosity, kinematic : < 20.5 cSt (based on Industry)

Viscosity, dynamic : No data available

Explosive properties : No data available

Oxidizing properties : No data available

Explosive limits : 1 - 15%

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

This product is anticipated to be stable under normal ambient storage and handling conditions of temperature and pressure.

10.2. Chemical stability

Highly flammable liquid and vapor. May form flammable/explosive vapor-air mixture.

10.3. Possibility of hazardous reactions

No additional information available

10.4. Conditions to avoid

Direct sunlight. Extremely high or low temperatures. Open flame.

10.5. Incompatible materials

Strong acids. Strong bases. Strong oxidizing agents.

10.6. Hazardous decomposition products

Combustion may produce CO, NOx, Sox, and reactive hydrocarbons.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity : Not classified

Crude Oil (8002-05-9)	
LD50 oral rat	> 4300 mg/kg

Benzene (71-43-2)	
LD50 oral rat	930 mg/kg
LD50 dermal rabbit	> 9400 µl/kg
LC50 inhalation rat (ppm)	5714 ppm/4h

n-Hexane (110-54-3)	
LD50 oral rat	25 g/kg Industrial Health. Vol. 32, Pg. 145, 1994.
LC50 inhalation rat (ppm)	48000 ppm/4h

Sulfur (7704-34-9)	
LD50 oral rat	> 8437 mg/kg Gigiena Truda i Professional'nye Zabolevaniya. Labor Hygiene and Occupational Diseases. Vol. 18(5), Pg. 48, 1974.
LD50 dermal rabbit	<= 2000 mg/kg

Gasoline (8006-61-9)	
LD50 oral rat	92000
ATE US (oral)	92000.000 mg/kg body weight

Ethylbenzene (100-41-4)	
LD50 oral rat	<= 3500 mg/kg
LD50 dermal rabbit	<= 15400 mg/kg
LC50 inhalation rat (ppm)	< 4000 ppm/4h American Industrial Hygiene Association Journal. Vol. 23, Pg. 95, 1962.

Naphthalene (91-20-3)	
LD50 oral rat	490 mg/kg
LD50 dermal rabbit	> 2000 mg/kg

Skin corrosion/irritation : Causes skin irritation.
pH: Not Established

Serious eye damage/irritation : Not classified
pH: Not Established

Respiratory or skin sensitization : Not classified

Germ cell mutagenicity : May cause genetic defects (Inhalation).

Carcinogenicity : May cause cancer (Inhalation).

Crude Oil (8002-05-9)	
IARC group	3 - Not classifiable

Benzene (71-43-2)	
IARC group	1 - Carcinogenic to humans
National Toxicology Program (NTP) Status	2 - Known Human Carcinogens

Ethylbenzene (100-41-4)	
IARC group	2B - Possibly carcinogenic to humans

Naphthalene (91-20-3)	
IARC group	2B - Possibly carcinogenic to humans
National Toxicology Program (NTP) Status	3 - Reasonably anticipated to be Human Carcinogen

Reproductive toxicity : Not classified

Specific target organ toxicity (single exposure) : Not classified

Specific target organ toxicity (repeated exposure) : Causes damage to organs (blood, spleen, liver, pancreas) through prolonged or repeated exposure.

Aspiration hazard : May be fatal if swallowed and enters airways.

Potential Adverse human health effects and symptoms : Based on available data, the classification criteria are not met.

Symptoms/injuries after inhalation : Exposure to low levels (700 to 3,000 ppm) may cause drowsiness, dizziness, tachycardia, headaches, tremors, confusion and unconsciousness. Exposure to high concentrations (3,000 ppm or higher) may cause acute poisoning, characterized by the narcotic action of benzene on the CNS. Inhalation of crude oil may present an anesthetic action similar to that of other anesthetic gases, consisting of a preliminary stage of excitation followed by depression and, if exposure is continued, seizures, paralysis, ventricular arrhythmias and death due to respiratory failure. May cause cancer by inhalation.

Symptoms/injuries after skin contact : Skin contact may cause irritation and redness. Repeated or prolonged skin contact may cause dermatitis. Crude oil is a defatting agent and skin contact may cause dryness, itching, and cracked skin.

Symptoms/injuries after eye contact : Eye contact with vapors may cause eye irritation, watering of eyes and reddening. Eye contact with liquid may cause irritation and pain. Prolonged contact may result in tissue damage.

Symptoms/injuries after ingestion : Swallowing this material may be harmful. May cause irritation of the mouth, throat and gastrointestinal tract. Symptoms may include salivation, pain, nausea, vomiting and diarrhea. Aspiration into lungs may cause chemical pneumonia and lung damage.

Chronic symptoms : Chronic exposure to benzene (a component of crude oil) may cause serious damage to health by all routes of exposure. Chronic oral and inhalation exposure may cause severe effects on the blood system, including damage to the bone marrow, leading to a decrease in production or changes to the cells of hemoglobin, hematocrit, red and white blood cells. Effects may occur with an exposure level as low as 10 ppm for 24 weeks. Benzene may also cause harmful changes to the immune system. Benzene is a confirmed human carcinogen. See Section 11 of this SDS for further information.

SECTION 12: Ecological information

12.1. Toxicity

Ecology - water : Toxic to aquatic life. Harmful to aquatic life with long lasting effects.

Crude Oil (8002-05-9)	
LC50 fish	3 mg/l Mayer, F.L.Jr., and M.R. Ellersieck 1986. Manual of Acute Toxicity: Interpretation and Data Base for 410 Chemicals and 66 Species of Freshwater Animals. Resour.Publ.No.160, U.S.Dep.Interior, Fish Wildl.Serv., Washington, DC :505 p. (USGS Data File); Moles, A., S.D. Rice, and S. Korn 1979. Sensitivity of Alaskan Freshwater and Anadromous Fishes to Prudhoe Bay Crude Oil and Benzene. Trans.Am.Fish.Soc. 108(4):408-414
EC50 Daphnia	5.3 ml/l MacLean, M.M., and K.G. Doe 1989. The Comparative Toxicity of Crude and Refined Oils to Daphnia magna and Artemia. Environment Canada, EE-111, Dartmouth, Nova Scotia :64 p.
EC50 Daphnia	1.65 mg/l MacLean, M.M., and K.G. Doe 1989. The Comparative Toxicity of Crude and Refined Oils to Daphnia magna and Artemia. Environment Canada, EE-111, Dartmouth, Nova Scotia :64 p.

n-Hexane (110-54-3)	
LC50 fish	2500 (≤ 113) µg/l 96 hr Fathead minnow (pimephales promelas)

Ethylbenzene (100-41-4)	
LC50 fish	2.6 mg/l Mysidopsis bahia (mysid shrimp)
EC50 Daphnia	2.93 mg/l MacLean, M.M., and K.G. Doe 1989. The Comparative Toxicity of Crude and Refined Oils to Daphnia magna and Artemia. Environment Canada, EE-111, Dartmouth, Nova Scotia :64 p.
ErC50 (algae)	5 mg/l Selenastrum capricornutum (algae)

Naphthalene (91-20-3)	
LC50 fish	1.99 (≤ 33) mg/l Millemann, R.E., W.J. Birge, J.A. Black, R.M. Cushman, K.L. Daniels, P.J. Franco, J.M. Giddings, J.F. McCarthy, and A.J. 1984. Comparative Acute Toxicity to Aquatic Organisms of Components of Coal-Derived Synthetic Fuels. Trans.Am.Fish.Soc. 113(1):74-85
EC50 Daphnia	11.8 mg/l MacLean, M.M., and K.G. Doe 1989. The Comparative Toxicity of Crude and Refined Oils to Daphnia magna and Artemia. Environment Canada, EE-111, Dartmouth, Nova Scotia :64 p.
EC50 Daphnia	8 mg/l MacLean, M.M., and K.G. Doe 1989. The Comparative Toxicity of Crude and Refined Oils to Daphnia magna and Artemia. Environment Canada, EE-111, Dartmouth, Nova Scotia :64 p.; Smith, S.B., J.F. Savino, and D.R.M. Passino 1985. Toxicity of Polyaromatic Hydrocarbons and Alkyl Halides in Great Lakes Fish to Daphnia pulex. In: Prog.Abstr.28th Conf.Int.Assoc.Great Lakes Res., June 3-5, 1985, Milwaukee, WI :63 (ABS)

12.2. Persistence and degradability

Sweet Crude Oil	
Persistence and degradability	Major constituents are inherently biodegradable, but crude oil contains components that may persist in the environment. The volatile constituents will oxidize rapidly by photochemical reactions in air.

12.3. Bioaccumulative potential

Sweet Crude Oil	
Bioaccumulative potential	Contains constituents with the potential to bioaccumulate.

12.4. Mobility in soil

Sweet Crude Oil	
Ecology - soil	Not established for this mixture, however this mixture contains volatile constituents. Partly evaporates from water or soil surfaces, but significant proportion will remain after one day. If the product enters the soil, one or more constituents will or may be mobile and may contaminate groundwater.

12.5. Other adverse effects

Effect on the global warming : No known ecological damage caused by this product.

Other information : Avoid release to the environment.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Waste disposal recommendations : It is recommended that this product, in any form, be incinerated in a suitable combustion chamber for disposal. Empty containers should be disposed of in a similar fashion due to presence of product residue. Follow applicable Federal, state, and local regulations. Dispose in a safe manner in accordance with local/national regulations.

Additional information : Handle empty containers with care because residual vapors are flammable.

Ecology - waste materials : Avoid release to the environment.

SECTION 14: Transport information

In accordance with DOT

Transport document description : UN1267 Petroleum crude oil, 3, I

UN-No.(DOT) : UN1267

Proper Shipping Name (DOT) : Petroleum crude oil

Department of Transportation (DOT) Hazard Classes : 3 - Class 3 - Flammable and combustible liquid 49 CFR 173.120

Hazard labels (DOT)	:	3 - Flammable liquid

Packing group (DOT)	:	I - Great Danger
DOT Special Provisions (49 CFR 172.102)	:	144 - If transported as a residue in an underground storage tank (UST), as defined in 40 CFR 280.12, that has been cleaned and purged or rendered inert according to the American Petroleum Institute (API) Standard 1604 (IBR, see 171.7 of this subchapter), then the tank and this material are not subject to any other requirements of this subchapter. However, sediments remaining in the tank that meet the definition for a hazardous material are subject to the applicable regulations of this subchapter. 357 - A bulk packaging that emits hydrogen sulfide in sufficient concentration that vapors evolved from the crude oil can present an inhalation hazard must be marked as specified in §172.327 of this part. T11 - 6 178.274(d)(2) Normal..... 178.275(d)(3) TP1 - The maximum degree of filling must not exceed the degree of filling determined by the following: Degree of filling = 97 / 1 + a (tr - tf) Where: tr is the maximum mean bulk temperature during transport, and tf is the temperature in degrees celsius of the liquid during filling. TP8 - A portable tank having a minimum test pressure of 1.5 bar (150 kPa) may be used when the flash point of the hazardous material transported is greater than 0 C (32 F).
DOT Packaging Exceptions (49 CFR 173.xxx)	:	150
DOT Packaging Non Bulk (49 CFR 173.xxx)	:	201
DOT Packaging Bulk (49 CFR 173.xxx)	:	243
DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27)	:	1 L
DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75)	:	30 L
DOT Vessel Stowage Location	:	E - The material may be stowed ‘‘on deck’’ or ‘‘under deck’’ on a cargo vessel and on a passenger vessel carrying a number of passengers limited to not more than the larger of 25 passengers, or one passenger per each 3 m of overall vessel length, but is prohibited from carriage on passenger vessels in which the limiting number of passengers is exceeded.

Additional information

Emergency Response Guide (ERG) Number	:	128
Other information	:	No supplementary information available.

ADR

No additional information available

Transport by sea

UN-No. (IMDG)	:	1267
Proper Shipping Name (IMDG)	:	PETROLEUM CRUDE OIL
Class (IMDG)	:	3 - Flammable liquids
Packing group (IMDG)	:	II - substances presenting medium danger

Air transport

UN-No.(IATA)	:	1267
Proper Shipping Name (IATA)	:	PETROLEUM CRUDE OIL
Class (IATA)	:	3 - Flammable Liquids
Packing group (IATA)	:	II - Medium Danger

SECTION 15: Regulatory information

15.1. US Federal regulations

Sweet Crude Oil	
SARA Section 311/312 Hazard Classes	Fire hazard Immediate (acute) health hazard Delayed (chronic) health hazard

Crude Oil (8002-05-9)
Listed on the United States TSCA (Toxic Substances Control Act) inventory

Benzene (71-43-2)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory Listed on United States SARA Section 313 Not listed on the United States SARA Section 313	
RQ (Reportable quantity, section 304 of EPA's List of Lists) :	10 lb

n-Hexane (110-54-3)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory Listed on United States SARA Section 313	
RQ (Reportable quantity, section 304 of EPA's List of Lists) :	5000 lb

Sulfur (7704-34-9)
Listed on the United States TSCA (Toxic Substances Control Act) inventory

Gasoline (8006-61-9)
Listed on the United States TSCA (Toxic Substances Control Act) inventory

Ethylbenzene (100-41-4)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory Listed on United States SARA Section 313	
RQ (Reportable quantity, section 304 of EPA's List of Lists) :	1000 lb

Naphthalene (91-20-3)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory Listed on United States SARA Section 313	
RQ (Reportable quantity, section 304 of EPA's List of Lists) :	100 lb

15.2. International regulations

CANADA

Sweet Crude Oil	
WHMIS Classification	Class B Division 2 - Flammable Liquid Class D Division 2 Subdivision A - Very toxic material causing other toxic effects

EU-Regulations

No additional information available

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Classification according to Directive 67/548/EEC [DSD] or 1999/45/EC [DPD]

Not classified

15.2.2. National regulations

Benzene (71-43-2)
Listed on IARC (International Agency for Research on Cancer) Listed as carcinogen on NTP (National Toxicology Program)

Ethylbenzene (100-41-4)
Listed on IARC (International Agency for Research on Cancer)

Naphthalene (91-20-3)
Listed on IARC (International Agency for Research on Cancer) Listed as carcinogen on NTP (National Toxicology Program)

15.3. US State regulations

Benzene (71-43-2)				
U.S. - California - Proposition 65 - Carcinogens List	U.S. - California - Proposition 65 - Developmental Toxicity	U.S. - California - Proposition 65 - Reproductive Toxicity - Female	U.S. - California - Proposition 65 - Reproductive Toxicity - Male	No significance risk level (NSRL)
Yes	Yes	No	Yes	

Ethylbenzene (100-41-4)				
U.S. - California - Proposition 65 - Carcinogens List	U.S. - California - Proposition 65 - Developmental Toxicity	U.S. - California - Proposition 65 - Reproductive Toxicity - Female	U.S. - California - Proposition 65 - Reproductive Toxicity - Male	No significance risk level (NSRL)
Yes	No	No	No	54

Naphthalene (91-20-3)				
U.S. - California - Proposition 65 - Carcinogens List	U.S. - California - Proposition 65 - Developmental Toxicity	U.S. - California - Proposition 65 - Reproductive Toxicity - Female	U.S. - California - Proposition 65 - Reproductive Toxicity - Male	No significance risk level (NSRL)
Yes	No	No	No	5.8

Crude Oil (8002-05-9)

U.S. - New Jersey - Right to Know Hazardous Substance List
U.S. - New York - Reporting of Releases Part 597 - List of Hazardous Substances

n-Hexane (110-54-3)

U.S. - Delaware - Pollutant Discharge Requirements - Reportable Quantities
U.S. - Idaho - Non-Carcinogenic Toxic Air Pollutants - Acceptable Ambient Concentrations
U.S. - Maine - Air Pollutants - Hazardous Air Pollutants
U.S. - Massachusetts - Right To Know List
U.S. - New Jersey - Right to Know Hazardous Substance List
U.S. - New York - Reporting of Releases Part 597 - List of Hazardous Substances
U.S. - Pennsylvania - RTK (Right to Know) List

Sulfur (7704-34-9)

U.S. - New Jersey - Right to Know Hazardous Substance List
U.S. - New York - Reporting of Releases Part 597 - List of Hazardous Substances

Gasoline (8006-61-9)

U.S. - New Jersey - Right to Know Hazardous Substance List
U.S. - New York - Reporting of Releases Part 597 - List of Hazardous Substances

Ethylbenzene (100-41-4)

U.S. - Delaware - Pollutant Discharge Requirements - Reportable Quantities
U.S. - Idaho - Non-Carcinogenic Toxic Air Pollutants - Acceptable Ambient Concentrations
U.S. - Maine - Air Pollutants - Hazardous Air Pollutants
U.S. - Massachusetts - Right To Know List
U.S. - New Jersey - Right to Know Hazardous Substance List
U.S. - New York - Reporting of Releases Part 597 - List of Hazardous Substances
U.S. - Pennsylvania - RTK (Right to Know) List
U.S. - Washington - Permissible Exposure Limits - TWAs

Naphthalene (91-20-3)

U.S. - Delaware - Pollutant Discharge Requirements - Reportable Quantities
U.S. - Idaho - Non-Carcinogenic Toxic Air Pollutants - Acceptable Ambient Concentrations
U.S. - Maine - Air Pollutants - Hazardous Air Pollutants
U.S. - Massachusetts - Right To Know List
U.S. - New Jersey - Right to Know Hazardous Substance List
U.S. - New York - Reporting of Releases Part 597 - List of Hazardous Substances
U.S. - Pennsylvania - RTK (Right to Know) List
U.S. - Washington - Permissible Exposure Limits - TWAs

SECTION 16: Other information

Revision date : 10/26/2015

Data sources : ChemADVISOR, Inc.[https://www.chemadvisor.com]. http://toxnet.nlm.nih.gov/cgi-bin/sis/search2/f?./temp/~OKqi2W:3.

Other information : None.

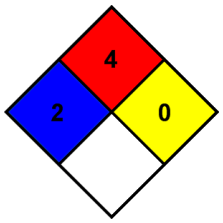
Full text of H-phrases:

Acute Tox. 4 (Dermal)	Acute toxicity (dermal) Category 4
Acute Tox. 4 (Inhalation)	Acute toxicity (inhalation) Category 4
Acute Tox. 4 (Oral)	Acute toxicity (oral) Category 4
Aquatic Acute 1	Hazardous to the aquatic environment - Acute Hazard Category 1
Aquatic Acute 2	Hazardous to the aquatic environment - Acute Hazard Category 2
Aquatic Chronic 1	Hazardous to the aquatic environment - Chronic Hazard Category 1
Aquatic Chronic 2	Hazardous to the aquatic environment - Chronic Hazard Category 2
Aquatic Chronic 3	Hazardous to the aquatic environment - Chronic Hazard Category 3
Asp. Tox. 1	Aspiration hazard Category 1
Carc. 1A	Carcinogenicity Category 1A
Carc. 1B	Carcinogenicity Category 1B
Carc. 2	Carcinogenicity Category 2
Flam. Liq. 1	Flammable liquids Category 1
Flam. Liq. 2	Flammable liquids Category 2
Muta. 1B	Germ cell mutagenicity Category 1B
Skin Irrit. 2	Skin corrosion/irritation Category 2
STOT RE 1	Specific target organ toxicity (repeated exposure) Category 1
STOT RE 2	Specific target organ toxicity (repeated exposure) Category 2
STOT SE 3	Specific target organ toxicity (single exposure) Category 3
H224	Extremely flammable liquid and vapor
H225	Highly flammable liquid and vapor
H302	Harmful if swallowed
H304	May be fatal if swallowed and enters airways
H312	Harmful in contact with skin
H315	Causes skin irritation
H332	Harmful if inhaled
H336	May cause drowsiness or dizziness
H340	May cause genetic defects
H350	May cause cancer
H351	Suspected of causing cancer
H372	Causes damage to organs through prolonged or repeated exposure
H373	May cause damage to organs through prolonged or repeated exposure
H400	Very toxic to aquatic life
H401	Toxic to aquatic life
H410	Very toxic to aquatic life with long lasting effects
H411	Toxic to aquatic life with long lasting effects
H412	Harmful to aquatic life with long lasting effects

NFPA health hazard : 2 - Intense or continued exposure could cause temporary incapacitation or possible residual injury unless prompt medical attention is given.

NFPA fire hazard : 4 - Will rapidly or completely vaporize at normal pressure and temperature, or is readily dispersed in air and will burn readily.

NFPA reactivity : 0 - Normally stable, even under fire exposure conditions, and are not reactive with water.



HMIS III Rating	
Health	: 2 Moderate Hazard - Temporary or minor injury may occur
Flammability	: 4 Severe Hazard
Physical	: 1 Slight Hazard
Personal Protection	: J

SDS US (GHS HazCom 2012)

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product